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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,775	07/21/2003	Deepak Saha	87324.1740	4238
7590 06/28/2005			EXAMINER	
BAKER & HOSTETLER LLP Washington Square Suite 1100 1050 Connecticut Avenue, N.W. Washington, DC 20036			TRAN, LEN	
			ART UNIT	PAPER NUMBER
			1725	
DATE MAILED: 06/28/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/622,775

Applicant(s)

SAHA ET AL.

Examiner

Len Tran

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 31-53 are rejected under 35 U.S.C. 102(b) as being anticipated by Bergsma (US 5,968,292).

As to claims 31, 34, and 36, Bergsma discloses a method for semi-solid casting comprising the steps of providing a first alloy, including an aluminum-silicon hypoeutectic alloy and a providing a second alloy, including a grain refiner, a reactive metal, boron. Both of the metals are liquefied by heating to a first temperature. The metals are generated to a semi-solid state by cooling the combination to a second temperature, wherein the semi-solid metal includes a multitude of aluminum particles having a particle size and a particle number (col. 4, line 55 – col. 5, line 67).

As to claims 32 and 33, it is inherent that the particle size is minimized or maximized by reducing the elapse.

Art Unit: 1725

As to claims 37 and 38, the aluminum particle is less than about 70 microns, and having an average from about 40 to 60 microns (col. 7, lines 61-64).

As to claim 39, Both the first and second alloys are heated greater than 617 degrees C (col. 15, lines 55-60). The first alloy comprises about 6 to 8% silicon (col. 4 line 60 - col. 5, line 59).

As to claims 40-44, wherein the first temperature is about 600-700 C (col. 6, line 51)

As to claims 35, 48-53, the second alloy comprises about 0.3 to 10% titanium (col. 6, line 5, line 66 and col. 7, line 15).

As to claims 45-47, the silicon is about 6-8% (col. 6, line 23).

Response to Arguments

3. Applicant's arguments filed 4/20/05 have been fully considered but they are not persuasive.

Applicant argues the following in pages 6 and 7:

Bergsma's process begins with, "providing a molten body of the aluminum base alloy," with a grain refiner, "and casting the molten body of aluminum base alloy to provide a solidified body". (Col. 4, lines 60-68). Thus, Bergsma liquefies his alloy, adds a grain refiner and cools it to a solid. The flow chart in FIG. 1 says, "cast hypoeutectic Al-Si alloy body at controlled solidification rate," which also means that a liquid metal is being cooled to a solid state. At this point, the solid still has a dendritic microstructure. (Col. 5, lines 3-4). "Thereafter, the solidified body is superheated to a superheating temperature . . . above the solidus temperature of the aluminum base alloy." (Col. 5, lines 6-9). The next step in the flow chart also states, "superheat body above solidus temperature" which means the solid metal is now being heated to SSM state between the liquidus and solidus states." It is at this point that the dendritic microstructure becomes globular. (Col. 5, lines 10-11). Then the "lower melting liquid phase is formed into said article." (Col. 5, lines 15-17). Furthermore, in each of his five examples, Bergsma presents a "cast" billet that is "superheated" above a solidus temperature to SSM state. Thus, Bergsma's process contains several additional steps that require extra time. This makes his process inefficient. Also, a great deal more energy is required in cooling the mixture from its molten state to a solid state and then heating it back up to a SSM state.

Art Unit: 1725

In contrast, Applicants claim, "liquefying at least one of the first alloy and the second alloy by heating to a first temperature; . . . generating a semi-solid metal by cooling the combination to a second temperature, . . . injecting the semi-solid metal into a die cavity to form a cast product" as recited in claim 31. Thus, Bergsma does not teach or suggest, inter alia, the method as recited in claims 31-53. Accordingly, withdrawal of the rejection of these claims is respectfully requested.

In response to applicant's argument, the claimed invention is not defined over the prior art of record based on the broadest interpretation. Applicant argues that Bergsman fails to teach liquefying at least one of the first alloy and the second alloy by heating to a first temperature. However, applicant acknowledges that Bergsma discloses "providing a molten body of the aluminum base alloy," with a grain refiner. In addition, Bergsma discloses the claimed invention: providing a first and second alloy (aluminum based and at least a second group (col. 4, lines 58-65)), with a grain refiner (col. 5, lines 60-61) and a reactive metal (aluminum, col. 5, line 63). Applicant then argues that Bergsma fails to teach generating a semi-solid metal by cooling the combination to a second temperature. Again, Applicant acknowledged that Bergsma disclose "Thereafter, the solidified body is superheated to a superheating temperature . . . above the solidus temperature of the aluminum base alloy." (Col. 5, lines 6-9). The next step in the flow chart also states, "superheat body above solidus temperature" which means the solid metal is now being heated to SSM state between the liquidus and solidus states. This recognition by applicant clearly indicates that the claimed invention is not defined over Bergsma's teaching. In another words, Bergsma discloses the Al-Si starts out at molten state (liquefied temperature, first temperature) combined with reactive metals and agents, then solidified (second temperature, cooling state), in which it has been cooled for the next step to generate a semi-solid metal. Then the metal is superheated, in which the superheated temperature never go beyond the liquidus temperature to achieve semi-solid state. Therefore, the claimed limitation is not distinct over Bergsma. Furthermore, the steps or injecting the semi-

Art Unit: 1725

solid to the die cavity is inherent, since the Bergsma teaches die casting. The claims remain rejected based on broadest interpretation, since the term "comprising" is open-ended and that does not exclude the additional steps taught by Bergsma.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

Art Unit: 1725

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran
Examiner
Art Unit 1725



June 23, 2005